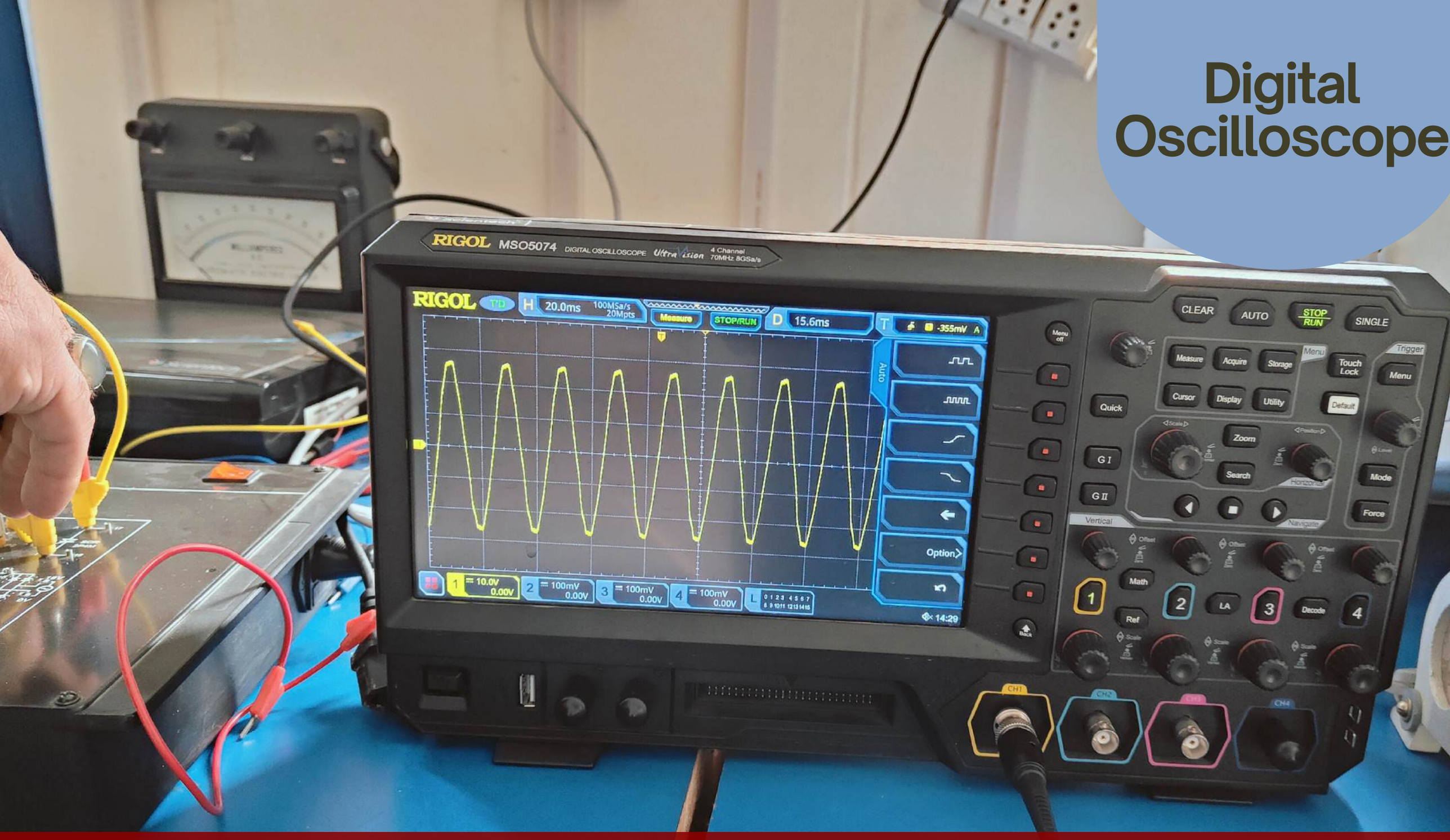
Digital Oscilloscope



Rigol oscilloscopes are electronic test instruments used to measure and analyze signals over time.Theycan measure the voltage of rapidly changing signals from components like microprocessors, amplifiers, and FPGAs.

Product Features

70 MHz Digital Oscilloscope with 4 channels, 8GS/s, 100Mpoint memory.

- Four channel, 70 MHz digital / mixed signal oscilloscope.
- Up to 8 GSa/s real-time sample rate
- 100 Mpts memory depth, optional memory depth up to 200 Mpts.
- 16 digital channels included - requires optional PLA2216 logic probe to operate.

Product Specifications

Manufacturer RIGOL TECHNOLOGIES USA INC

Item model number MSO5074

Product Dimensions 20.32 x 12.7 x 35.56 cm; 5.31 kg

ASIN B08MB13G1L

Additional Information

Manufacturer: RIGOL TECHNOLOGIES USA INC

Item Weight: 5 kg 310 g

Item Dimensions LxWxH: 20.3 x 12.7 x 35.6 Centimeters

FUNCTION GENERATOR

Function -Pulse Generator Scientech 4061 with 50MHz Frequency Counter are based on Direct Digital Synthesis technique to create stable and accurate output waveforms. They also offer linear ramp and square wave and pulse with fast rise/fall time. Generator also having built in Arbitrary waveforms to be used in various applications like Biomedical, Audio, Mathematics, etc. Front-panel operation is very user friendly. Internal Modulation makes it easy to modulate waveforms without the need of any separate modulation source.

PRODUCT FEATURES

DDS (Direct Digital Synthesis) Technique
Frequency Resolution 1mHz
Waveforms - Sine, Square, Triangle, Ramp, Pulse, TTL, Sinc, Cardiac, Blackman, Stair Up, Stair Down, Exponential Rise, Exponential Fall, Voice, Noise, Sine Vertical , Alternate Attenuation, Alternate Amplification, Round PM, Absolute Sine
50 MHz Frequency Counter
Low Distortion
20Vpp Output (O.C.)
Ethernet (optional)
Internal Modulations & TTL
TFT Color LCD Display
Amplitude Readout
Rise/Fall time <_20ns
High Accuracy
60dB Attenuation
DC Offset

Frequency:3MHz
Frequency Disp Accuracy:+- 0.2%
Triangle Non-Linearity:1%
Output Impedance:50 omega
DC Offset:+-5V adjustment
Sensitivity:0.5Vrms

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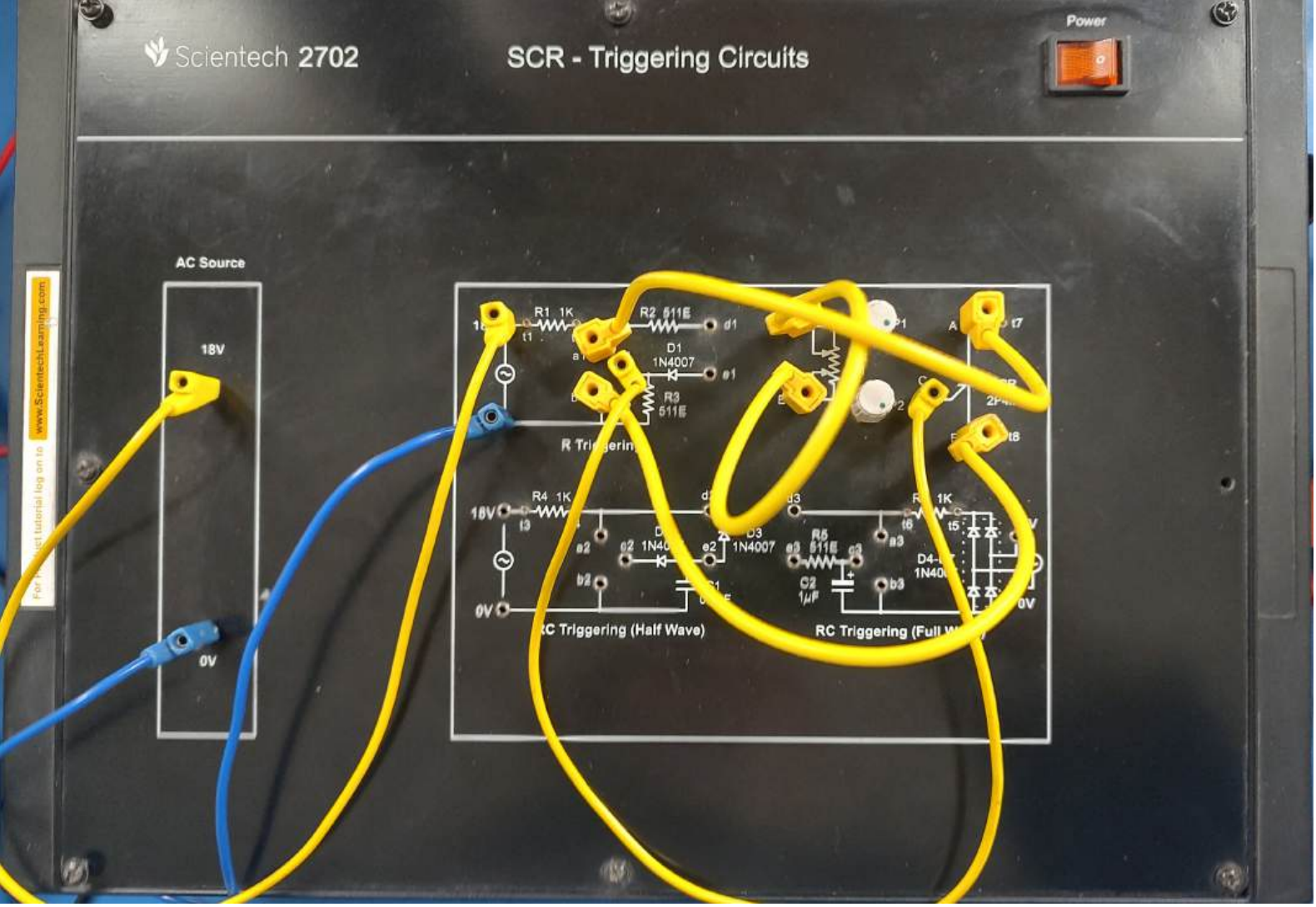
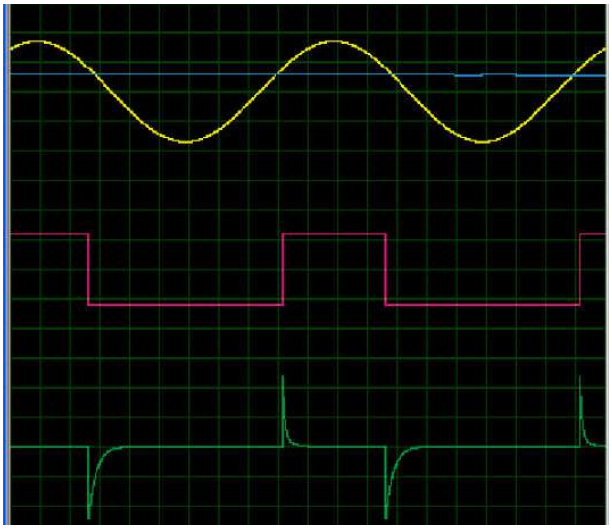
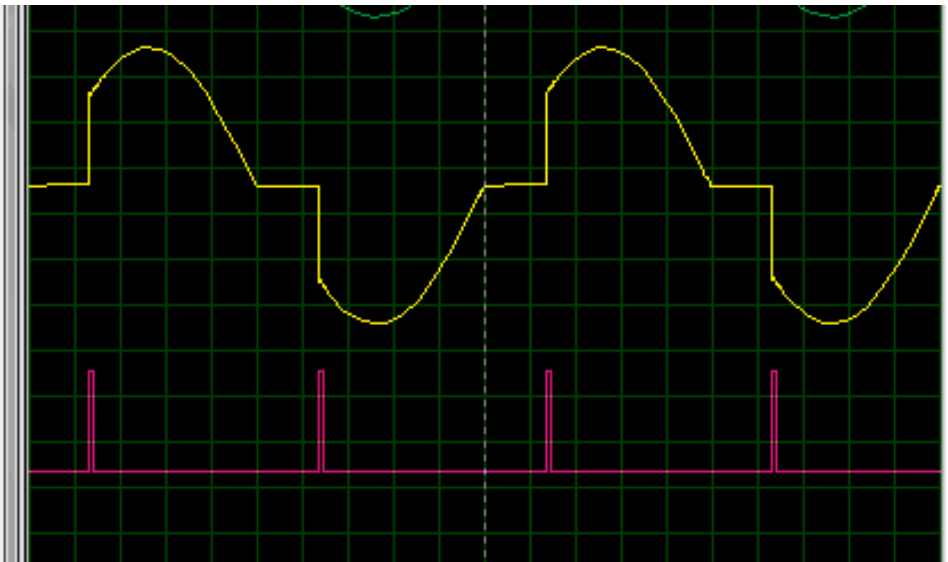




SCR-TRIGGERING CIRCUITS

The triggering circuit of an SCR consists of a timing component, a pulse generation circuit, a power supply and a resistive network.

SCR triggering circuit refers to a device that is specifically designed to generate a precise and controlled signal to trigger the gate of SCR in order to initiate conduction.

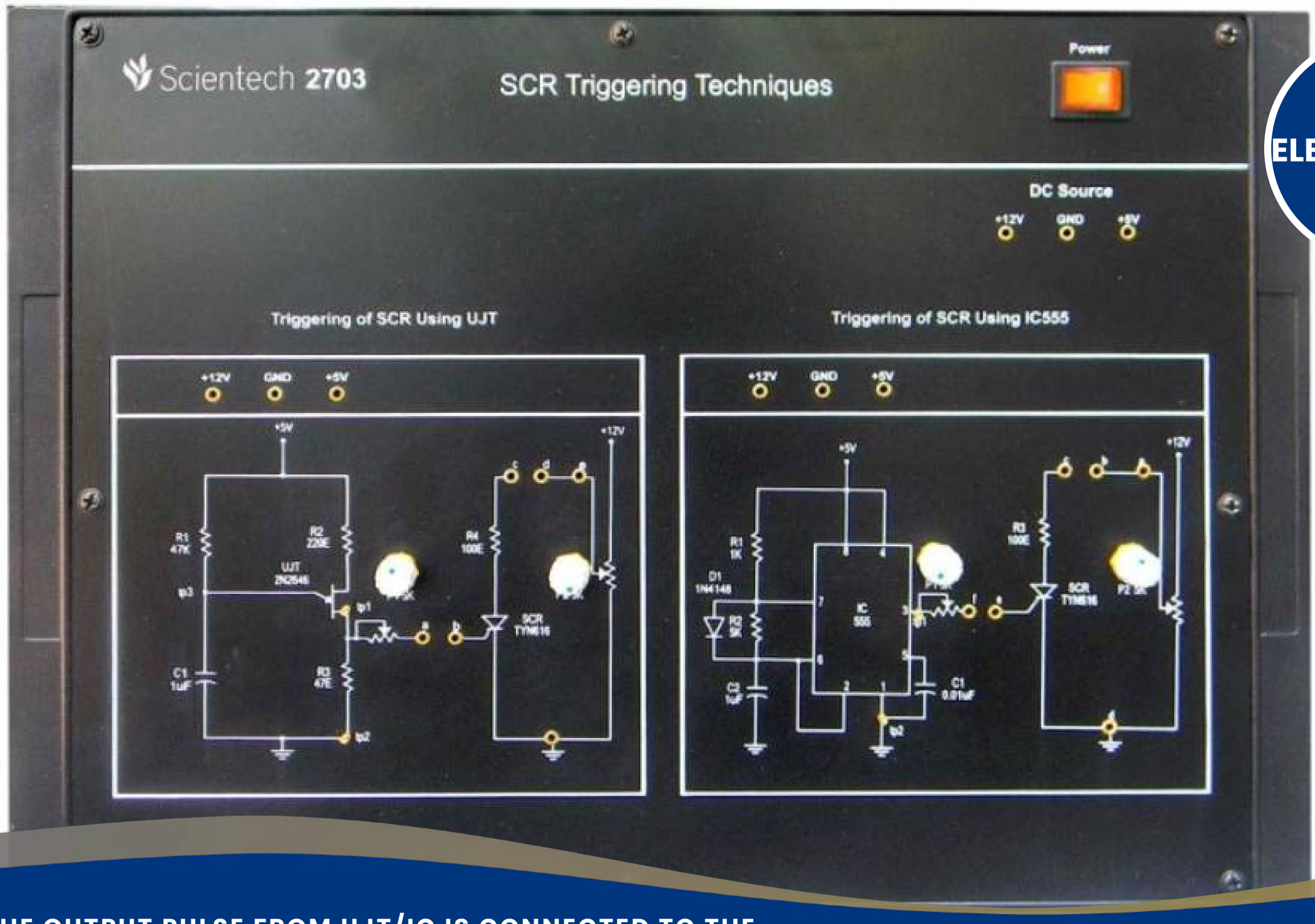


Scientech 2702

SCR Triggering Techniques using UJT and IC555

Scientech 2703

POWER ELECTRONICS



THE OUTPUT PULSE FROM UJT/IC IS CONNECTED TO THE GATE OF SCR.
BY USING A POT THE GATE CURRENT CAN BE CONTROLLED.
MONITOR THE ANODE TO CATHODE CURRENT.
IT WILL SHOW AT WHICH POINT
THE SCR IS GETTING TRIGGERED.

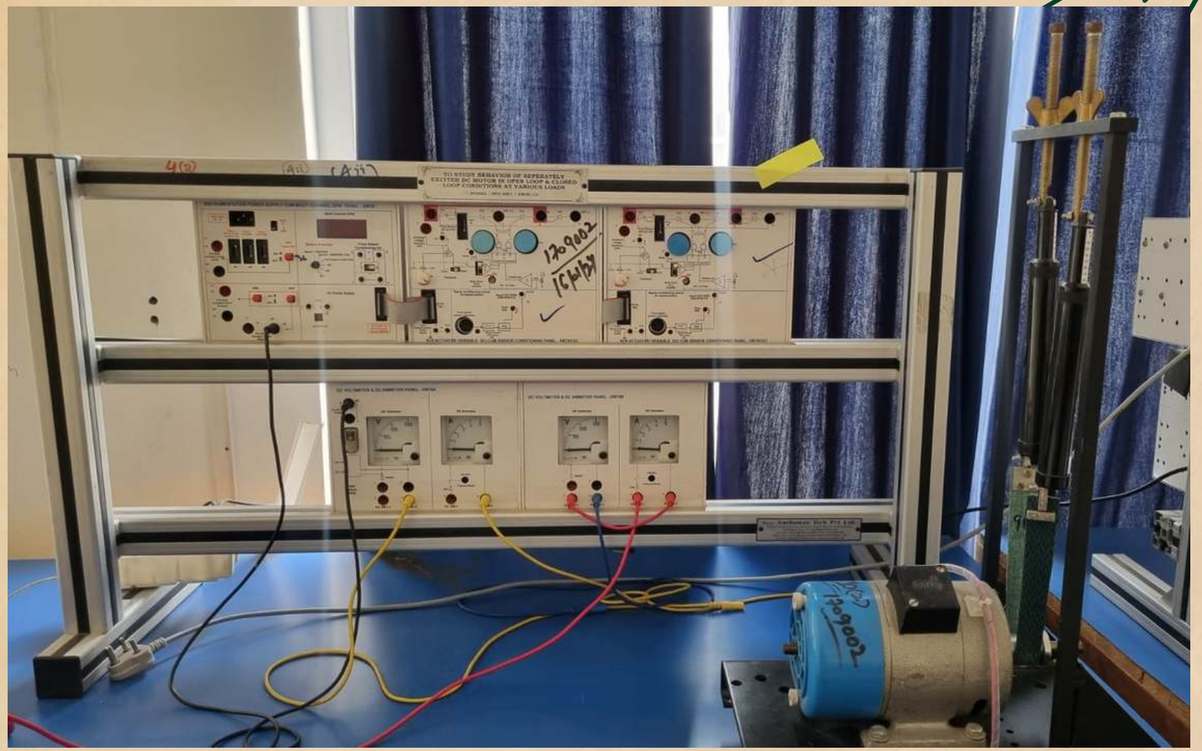
Technical Specifications

- ON BOARD AC SOURCE : 18 V - 0 V - 18 V
- ON BOARD DC SUPPLY : +5 V, +12 V
- ON BOARD TRIGGERING CIRCUITS
- 555 IC TRIGGERING CIRCUIT
- UJT TRIGGERING CIRCUIT
- INTERCONNECTION : 2 MM SOCKET (GOLD PLATED)
- SCR : SCRS TYN616, 600V/16 A
- TEST POINTS : 4 NOS (GOLD PLATED)
- DIMENSIONS (MM) : W 420 X D 255 X H 100
- POWER SUPPLY : 110V - 260V AC, 50/60HZ
- WEIGHT : 1 KG. (APPROXIMATELY)
- OPERATING CONDITIONS : 0-400 C, 80%

Precautions

- **Use proper Mains cord : Use only the mains cord designed for this Instrument.**
- **Ground the Instrument : This instrument is grounded through the**
- **protective earth conductor of the mains cord.**
- **To avoid electric shock the grounding**
- **conductor must be connected to the earth**
- **ground. Before making connections to the**
- **input terminals, ensure that the instrument is Properly grounded.**
- **Observe Terminal Ratings : To avoid fire or shock hazards, observe all RATings and marks on the instrument.**
- **Use only the proper Fuse : Use the fuse type and rating specified for this Instrument.**
- **DO not operate in wet / damp conditions.**
- **Do not operate in an explosive Atmosphere**
- **Keep the product dust free, clean and dry.**

Separately Excited DC motor



Learning Objective:

To study behaviour of separately Excited DC motor in open loop and closed loop conditions

Experimental Setup

To study the behavior of a separately excited DC motor in open-loop and closed-loop conditions, the following experimental setup can be used:

1. *DC Motor*: A separately excited DC motor with a rated power of 1 kW and a rated speed of 1500 rpm.
2. *Power Supply*: A DC power supply with a variable output voltage and current.
3. *Speed Sensor*: A speed sensor, such as a tachogenerator or an encoder, to measure the motor speed.
4. *Controller*: A controller, such as a PI or PID controller, to regulate the motor speed in closed-loop mode.

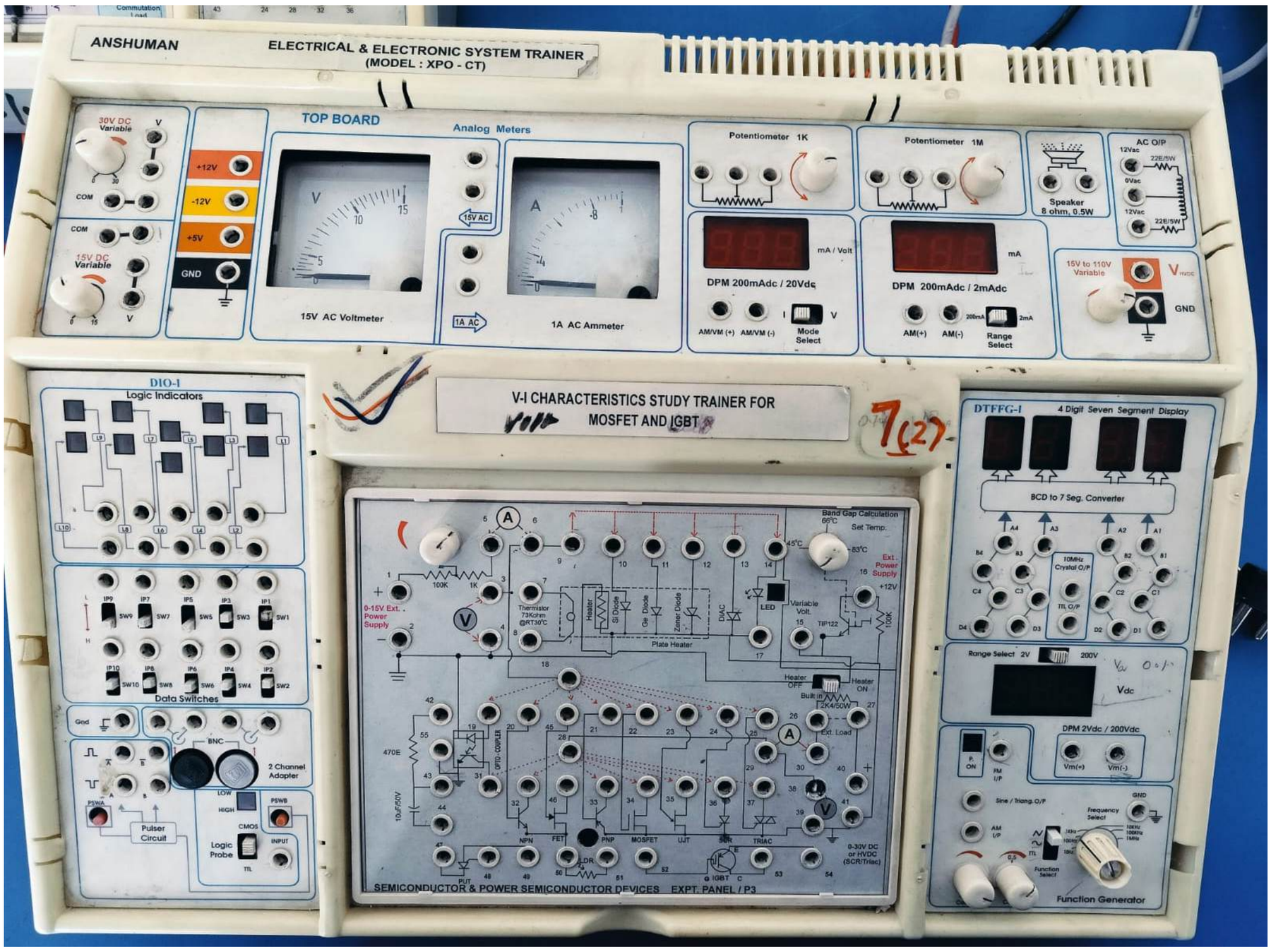
Procedure
1. *Open-Loop Test*: Set the motor to open-loop mode and vary the armature voltage or field current to observe the motor speed response.
2. *Closed-Loop Test*: Set the motor to closed-loop mode and vary the desired speed to observe the motor speed response.
3. *Disturbance Test*: Apply a disturbance, such as a change in load or temperature, to the motor and observe the motor speed response in both open-loop and closed-loop modes.

Results
The experimental results will show the differences in motor speed response between open-loop and closed-loop modes. The closed-loop mode will demonstrate improved speed regulation and the ability to handle disturbances, while the open-loop mode will show poor speed regulation and an inability to handle disturbances.

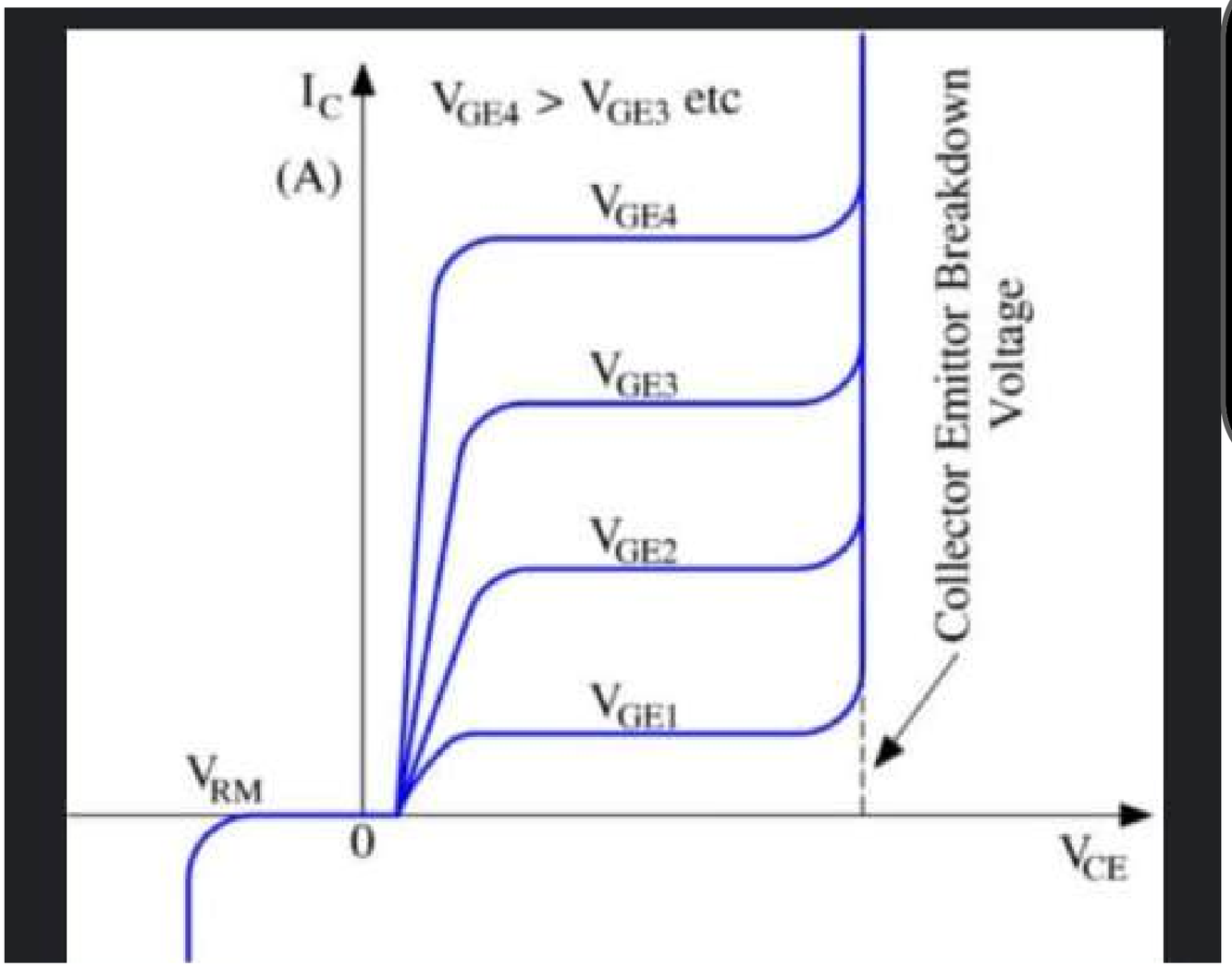
Conclusion
In conclusion, this experiment demonstrates the behavior of a separately excited DC motor in open-loop and closed-loop conditions. The results show that closed-loop control provides improved speed regulation and the ability to handle disturbances, while open-loop control is simple but has poor speed regulation and an inability to handle disturbances.

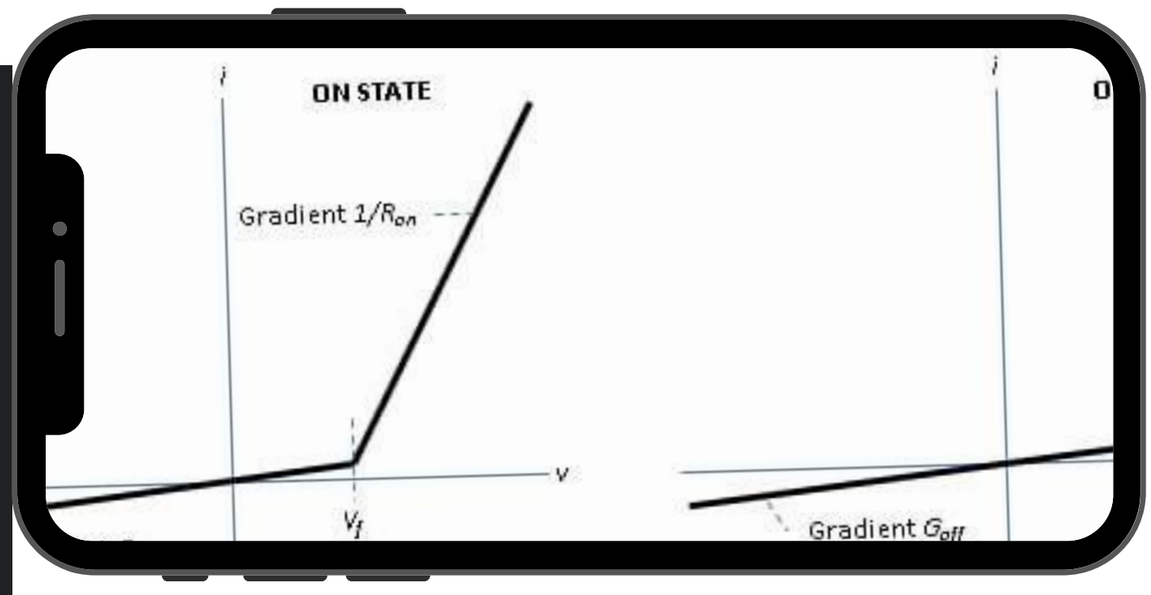
ELECTRICAL & ELECTRONIC SYSTEM TRAINER

Model XPO-CT



This trainer is designed for studying the voltage-current (V-I) characteristics of MOSFETs (Metal-Oxide-Semiconductor Field-Effect Transistors) and IGBTs (Insulated Gate Bipolar Transistors). It provides hands-on experience for students to learn about the operation and applications of these semiconductor devices.





Specifications

Input Voltage: 0-20V DC (adjustable). Current Measurement Range: 0-5A. Integrated test points for circuit debugging.

Key Features

Integrated voltage and current meters.
Dedicated function generator for waveform input.
User-friendly interface for parameter adjustment.
Real-time measurement of V-I characteristics
High-quality build for academic and laboratory use.